

FIVE NEW SPECIES OF THE GENUS *TMARUS*
(ARANEAE, THOMISIDAE) FROM THE WEST INDIES

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The Genus *Tmarus* Simon, 1875, is widely distributed in Europe, Asia, Africa, Australia and in the Americas. This is especially true of South America. It appears to be abundant and highly diversified into species in the Neotropical region. At the present time thirty species are known from Panama alone. But, so far as I have been able to determine, the genus has not been reported from the West Indies until the present time. I was much interested, therefore, to find several species of this genus in my collections made during the last few years in Jamaica, Puerto Rico and Trinidad. These have now been carefully studied with the result that I am obliged to recognize five new species from these islands. Two of these species are known from both sexes; two are known only from males and the remaining one is known only from the female. These five species are described in the following pages of this brief paper and may be listed as follows: *Tmarus craneae* sp. nov.; *T. farri* sp. nov.; *T. insuetus* sp. nov.; *T. menotus* sp. nov.; *T. vertumus* sp. nov. The types will be deposited in the Museum of Comparative Zoology at Harvard University.

Grant No. GB-1801 from the National Science Foundation made it possible for me to spend seven months making collections of spiders in the West Indies and Panama during the latter part of 1963 and the first five months of 1964. This grant is also making it possible for me to continue my studies at the Museum of Comparative Zoology for a considerable period. A Guggenheim Fellowship made it possible for me to collect in Jamaica, W. I. and in Panama in 1957 and 1958 and also to spend four months in the British Museum (Natural History). Dr. G. Owen Evans and Mr. D. J. Clark, Department of Zoology (Arachnida), British Museum (N. H.) have recently loaned me valuable specimens of the genus *Tmarus* to help me in my studies. As I have frequently stated in my published papers, I am deeply appreciative of the many privileges extended to me by the staff of the Museum of Comparative Zoology, Harvard University, over a period of many years. My studies could never have been carried on as they have been continued without this encouragement. Special acknowledgements should be extended to Dr. Ernst Mayr, Director;

Dr. P. J. Darlington, Jr., Alexander Agassiz Professor of Zoology; Dr. Herbert W. Levi, Associate Curator of Arachnology; and Miss Nelda Wright, Editor of Publications. These acknowledgements should now also be extended to Dr. Frank M. Carpenter, Alexander Agassiz Professor of Zoology and Editor of *Psyche* in which journal several of my published papers have appeared.

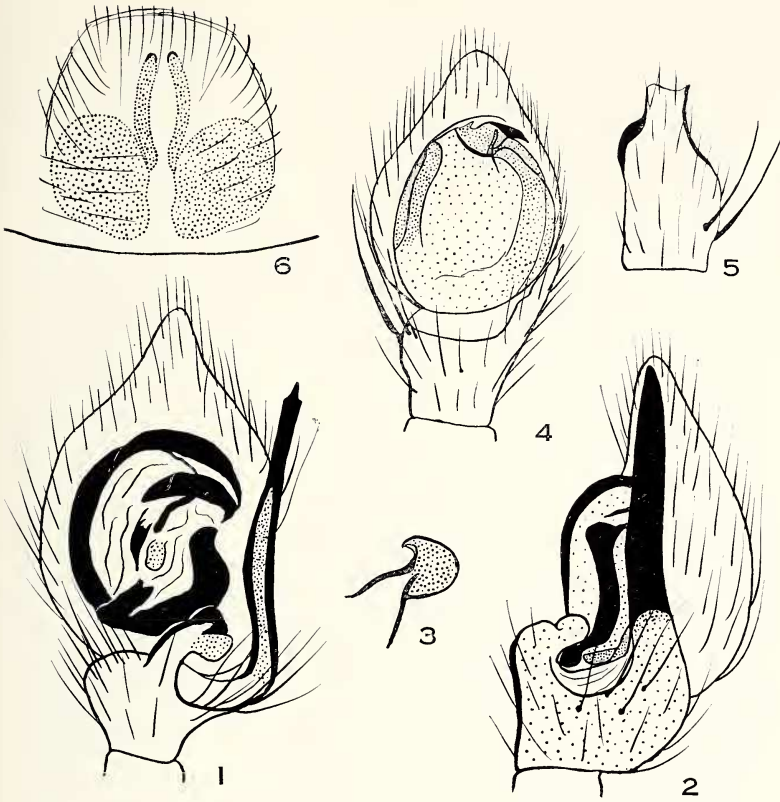
Genus *Tmarus* Simon, 1875

Tmarus craneae sp. nov.

Figures 1-3

This species is named after Miss Jocelyn Crane, Director, The William Beebe Tropical Research Station, Simla, Arima Valley, Trinidad, W. I.

Male holotype. Total length 4.19 mm, including quite porrect chelicerae and extended spinnerets. Carapace 1.52 mm long; 1.38 mm wide; about .53 mm tall, exclusive of the prominent lateral ocular tubercles; with the usual long, slender spines; surface between the spines smooth; with no median thoracic groove. Eyes: viewed from above, posterior row strongly recurved, anterior row moderately so; viewed from in front, anterior row straight, measured by centers. Central ocular quadrangle wider behind than in front in ratio of about 3 : 2; nearly as long as wide behind. Posterior row occupies nearly four fifths of width of carapace at that level. Ratio of eyes AME : ALE : PME : PLE = 5 : 10 : 6 : 10. AME separated from one another by slightly more than twice their diameter, from ALE by 2.6 times their diameter. PME separated from one another by nearly three times their diameter, from PLE by 4.6 times their diameter. Laterals separated from one another by 2.7 times their diameter. Clypeus porrect in the usual manner; apparently with the usual long, slender spines near ventral border (judged by scars); height, including membranous ventral border, equal to about seven times the diameter of AME. Chelicerae, maxillae, lip and sternum all apparently typical of the genus. Legs: 1 = 243 in order of length; first and second nearly twice as long as third and fourth; with many spines; tarsal claws as usual; trichobothria observed on tibiae, metatarsi and tarsi. Palp: patella short, unmodified; tibia with conspicuous apophyses and features of the tarsal bulb as shown in Figures 1-2. Abdomen: elongated and somewhat cylindrical; without special modifications; with numerous long, conspicuous, slender, dorsal spines. Color in alcohol: rather conspicuously colored; carapace yellowish with a narrow, red, ventral, marginal band; a dorsal, irregular, V-shaped



Figs. 1-6. External anatomy of *Tmarus*. Figs. 1-2, *T. craneae* sp. nov., left palpal tibia and tarsus; ventral and retrolateral views, respectively. Fig. 3, *T. craneae* sp. nov., another view of the ventral, tibial apophysis. Fig. 4, *T. farri* sp. nov., left palpal tibia and tarsus; ventral view. Fig. 5, *T. farri* sp. nov., left palpal tibia; retrolateral view. Fig. 6, *T. farri* sp. nov., epigynum from below.

red mark extends from PLE and down the posterior declivity for nearly half its declivity; the clypeus bears a broad, somewhat U-shaped red figure; each chelicera bears a red spot on its front surface; other mouth parts generally yellowish; legs yellowish with many red dots and larger spots and stripes; first and second femora and, to a lesser extent, first and second patellae and tibiae, with many small, irregular, reddish spots on the proteral surfaces; abdomen with a mixture of brown, white and red colors difficult to describe adequately; with a

series of five irregular, white, transverse bars closely associated with narrow red bars; these separate the brown area into four more or less rectangular blocks; lateral areas yellowish white with darker, oblique bars; venter with a broad, very light brownish, median stripe flanked on each side by ventrolateral, yellowish white areas. This species seems to be closely related to *T. aculeatus* Chickering and others in which the male palp has the conspicuously developed tibial apophyses.

Type locality. The holotype male is from Simla, Arima Valley, Trinidad, W. I., April 18, 1964. Three immature specimens from the same locality, April, 1964 probably belong to the same species. The female is unknown.

Tmarus farri sp. nov.

Figures 4-6

The species is named after Dr. T. H. Farr, Science Museum, Institute of Jamaica, Kingston, Jamaica, W. I.

Male holotype. Total length from tip of porrect chelicerae to posterior end of somewhat extended spinnerets 3.32 mm. Carapace 1.16 mm long; almost exactly as wide as long; about .48 mm tall; sharply constricted below posterior margin of ALE and then broadly and regularly rounded to posterior border; with several long, slender spines each arising from a small, chitinized tubercle; without a median thoracic groove or pit. Eyes: lateral ocular tubercles well developed; viewed from above, posterior row definitely recurved, anterior row gently so, exclusive of the very convex lenses; seen from in front, anterior row straight, measured by centers. Central ocular quadrangle wider behind than in front in ratio of about 13 : 8; wider behind than long in ratio of about 26 : 23. Posterior row occupies about 10/13 of width of carapace at that level. Ratio of eyes AME : ALE : PME : PLE = 3.5 : 8.5 : 5 : 7.5. AME separated from one another by about three times their diameter, from ALE by a little more than 3.7 times their diameter. PME separated from one another by 3.2 times their diameter, from PLE by 4.6 times their diameter. Laterals separated by slightly more than twice the diameter of PLE. Clypeus quite porrect; apparently with seven spines in an upturned row but the lateral spines are small; height equal to slightly more than seven times the diameter of AME. Chelicerae, maxillae, and lip all typical of males of the genus. Sternum broadly scutiform; slightly convex; longer than wide in ratio of about 10 : 9; with many fine, procurved bristles; posterior end bluntly terminated opposite bases of fourth coxae which are separated by about their width. Legs: 123 =

4 in order of length; first and second more than twice as long as third and fourth; numerous trichobothria observed on tibiae, metatarsi and tarsi. Palp: reminiscent of the palp of *T. ineptus* O. P.-Cambridge and *T. intentus* O. P.-Cambridge as these species are now understood; essential features shown in Figures 4-6. Abdomen: with many spines; about one third from base there is a pair of small, low, dorsal tubercles each topped by a slender, stiff, somewhat recurved spine; about two thirds from base there is a median, low tubercle corresponding to the pronounced posterodorsal tubercle of the female; shortly anterior to this reduced dorsal tubercle the abdomen is somewhat widened; otherwise apparently typical of males of the genus. Color in alcohol: carapace with dorsal area yellowish in general but with small, irregular, reddish brown spots and streaks extending from median margins of tubercles bearing PLE to top of posterior declivity; clypeus about the same; lateral sides a mottled, darker, reddish brown; central part of posterior declivity yellowish with a central darker spot. Chelicerae: front surface with yellowish margins, somewhat darker centrally. Sternum yellowish with small, irregular, darker spots. Maxillae and lip yellowish with variations. Legs: light brownish in general; with brownish, yellowish and reddish spots; first two pairs of femora conspicuously spotted with irregular brownish and whitish spots; first two pairs of metatarsi and tarsi somewhat reddish. Abdomen: dorsum yellowish white with many irregular, small darker spots; venter light brownish centrally, flanked by yellowish white areas.

Female paratype. Total length, including somewhat porrect chelicerae, 3.84 mm. Carapace 1.62 mm long; 1.56 mm wide; about .81 mm tall; with numerous spines each of which arises from a small, chitinized tubercle; with a series of grooves radiating over the lateral regions from the dorsolateral areas. Eyes: lateral ocular tubercles large; with a deep depression separating ALE from PLE; viewed from above, posterior row recurved, anterior row slightly so, exclusive of the very convex lenses of ALE; viewed from in front, anterior row slightly procurved, measured by centers. Central ocular quadrangle wider behind than in front in ratio of about 19 : 12; wider behind than long in ratio of 38 : 31. Posterior row occupies about 11/12 of width of carapace at that level. Ratio of eyes AME : ALE : PME : PLE = 4 : 10.5 : 7 : 9.5. AME separated from one another by nearly four times their diameter, from ALE by a slightly greater distance. PME separated from one another by slightly more than 3.5 times their diameter, from PLE by about 4.7 times their diameter.

Laterals separated by slightly more than twice the diameter of ALE. Clypeus quite porrect; with one erect spine beneath interval separating AME and two erect spines on each side near ventral border; height nearly equal to eight times the diameter of AME. Mouth parts essentially typical of females of the genus. Legs: 1243 in order of length; spines are numerous and, in general, typical of females of the genus; trichobothria essentially as in male, also observed on palpal tibiae. Abdomen: very spiny and irregular along dorsal region (probably associated with shrinkage following deposition of eggs); with a well developed posterodorsal tubercle projecting upward at an angle; somewhat the widest in front of base of posterodorsal tubercle. Epigynum: essential features shown in Figure 6; some variations noted among paratypes. Color in alcohol: essentially as described for male but all colors are more vivid than in that sex; first two pairs of tarsi and metatarsi not reddish as in male but irregularly yellowish brown.

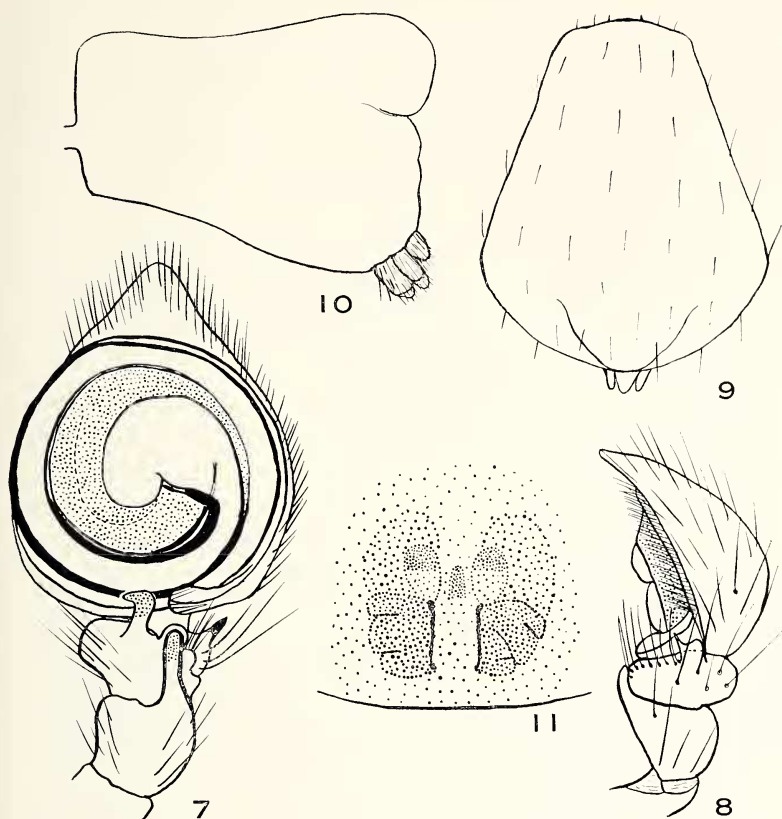
Type locality. Male holotype and female paratype taken on north-east slope of Long Mt., St. Andrew Parish, Jamaica, W. I., October 26th, 1957. Numerous paratypes of both sexes were taken with the holotype and also in St. Catherine Parish, Hanover Parish, and on other parts of St. Andrew Parish in 1954, 1957 and 1963.

Tmarus insuetus sp. nov.

Figures 7-8

The name of the species is a Latin adjective suggested by the unusual type of male palp.

Male holotype. Total length 4.03 mm. Carapace 1.5 mm long; 1.5 mm wide; .63 mm tall; surface very finely granulate; with numerous long, slender spines; posterior declivity gently arched, not steeply slanted. Eyes: ocular tubercles less prominent than usual in the genus but otherwise typical of the genus; viewed from above, posterior row rather strongly recurved, anterior row moderately so; viewed from in front anterior row slightly recurved, measured by centers. Central ocular quadrangle wider behind than in front in ratio of 11 : 8; longer than wide behind in ratio of 13 : 11. Posterior row occupies about 6/7 of width of carapace at that level. Ratio of eyes AME : ALE : PME : PLE = 4 : 10 : 5 : 9. AME separated from one another by twice their diameter, from ALE by 2.75 times their diameter. PME separated from one another by 2.6 times their diameter, from PLE by nearly five times their diameter. Laterals separated from one another by about 2.2 times the diameter



Figs. 7-11. External Anatomy of *Tmarus*. Fig. 7, *T. insuetus* sp. nov., left palpal patella, tibia and tarsus; ventral view. Fig. 8, *T. insuetus* sp. nov., left palpal patella, tibia and tarsus; retrolateral view. Figs. 9-10, *T. menotus* sp. nov., female abdomen: dorsal and left lateral view; respectively. Fig. 11, *T. menotus* sp. nov., epigynum from below.

of ALE. Clypeus only moderately porrect; with a row of long, slender spines near ventral border; height, including membranous ventral border, nearly equal to six times the diameter of AME. Chelicerae, maxillae, lip and sternum all apparently typical of the genus. Legs: 1 = 234 in order of length; first two pairs very long and slender and with numerous, long, slender spines; third and fourth less than half as long as first and second and with less conspicuous spines; tarsal claws and trichobothria apparently typical of the genus. Palp: com-

plicated; patella with unusual apophysis; tibia with a group of short apophyses; tarsus with embolus encircling the bulb more than three times (Figs. 7-8). Abdomen: cylindrical through anterior two thirds and then much posteriorly narrowed to posterior end; only a slight indication of a median posterodorsal tubercle at about the beginning of the last quarter. Color in alcohol: less colorful, in general, than usual in the genus. Carapace: yellowish with a reddish streak around the medial borders of the lateral ocular tubercles. Mouth parts and sternum yellowish. Legs yellowish; lacking the conspicuous markings characteristic of many species in the genus. Abdomen: yellowish in general; dorsum with numerous white and reddish spots and transverse bands; venter with a broad, very light brown, central stripe flanked on each side by whitish areas.

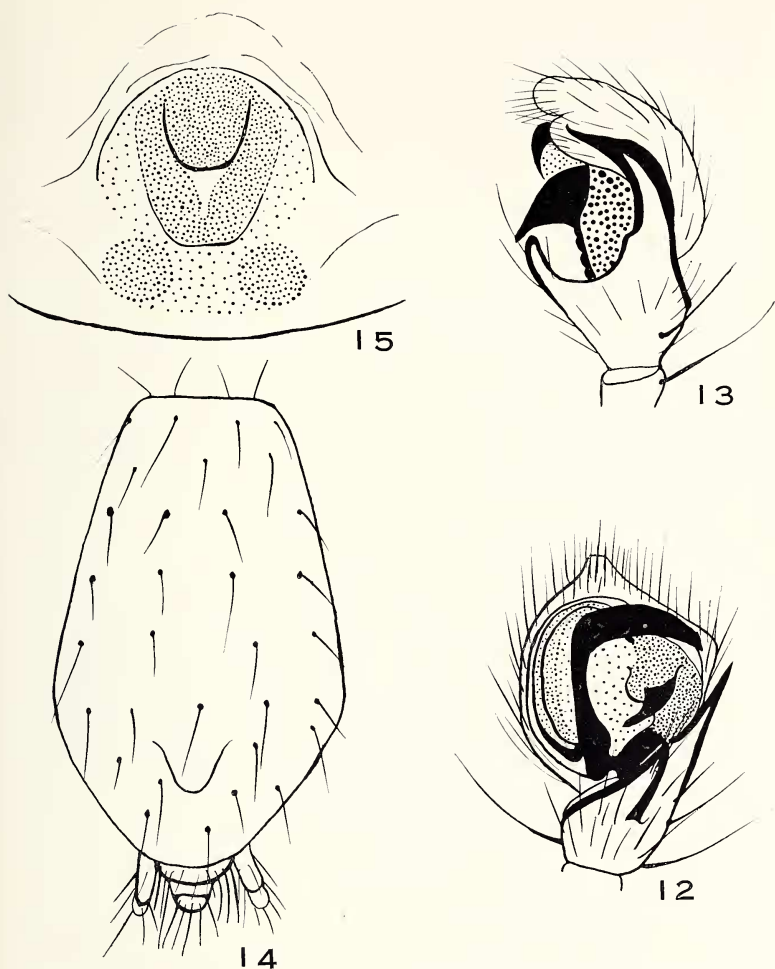
Type locality. The male holotype is from Simla, Arima Valley, Trinidad, W. I., April 23, 1964. One male paratype is in the collection from the same locality, April 17, 1964. The female is unknown.

Tmarus menotus sp. nov.

Figures 9-11

The name of the species is an arbitrary combination of letters.

Female holotype. Total length 5.2 mm, including somewhat porrect chelicerae (length increased somewhat by stretching in preservation). Carapace 1.65 mm long; 1.54 mm wide; about .7 mm tall; otherwise quite typical of females of the genus. Eyes: ocular tubercles as usual in females; viewed from above, posterior row moderately recurved, anterior row gently so, exclusive of the very convex lenses of ALE; viewed from in front, anterior row nearly straight, measured by centers. Central ocular quadrangle wider behind than in front in ratio of 19 : 12; wider behind than long in ratio of 19 : 15. Posterior row occupies a little more than $\frac{4}{5}$ of width of carapace at that level. Ratio of eyes AME : ALE : PME : PLE = 5 : 12 : 7 : 10. AME separated from one another by about three times their diameter, from ALE by a slightly greater distance. PME separated from one another by slightly more than 3.5 times their diameter, from PLE by nearly 4.25 times their diameter. Laterals separated by a little more than twice the diameter of PLE. Clypeus quite porrect; with a row of seven slender spines; height nearly equal to seven times the diameter of AME. Chelicerae, maxillae, lip and sternum all apparently typical of females of the genus. Legs: 1 = 243 in order of length; with numerous spines; trichobothria observed on tibiae, metatarsi and tarsi; tarsal claws as usual. Abdomen: short, broad and tall (Figs. 9-10);



Figs. 12-15. External Anatomy of *Tmarus*. Figs. 12-13, *T. vertumus* sp. nov., left palpal tibia and tarsus; ventral and retrolateral views, respectively. Fig. 14, *T. vertumus* sp. nov., female abdomen; dorsal view. Fig. 15, *T. vertumus* sp. nov., epigynum from below.

with a short, obtuse, posterodorsal tubercle; spines short, inconspicuous; other features essentially typical of females of the genus. Epigynum: essential features shown in Figure 11; obscurely distinctive; unlike any other seen during my study of the genus in Panama and the

West Indies. Color in alcohol: carapace yellowish in general, with a mottled appearance; with many fine, brownish dots; bases of largest spines usually brownish; posterior declivity a medium brown. Legs and mouth parts yellowish in general; prolateral surfaces of first two pairs of femora, patellae and tibiae very light yellowish with darker spots. Abdomen: dorsum light yellowish in general but with many fine, dark dots; posterolateral surfaces a medium brown; venter with a narrow, median, light brown stripe flanked on each side by a very light yellowish area.

Type locality. The female holotype is from St. Catherine Parish, six miles east of May Pen, Jamaica, W. I., November 22, 1957. There are no paratypes and the male is unknown.

Tmarus vertumus sp. nov.

Figures 12-15

The name of the species is an arbitrary combination of letters.

Male holotype. Total length, including somewhat porrect chelicerae and extended spinnerets, 4.1 mm. Carapace 1.43 mm long; 1.41 mm wide; about .65 mm tall; ventral margin regularly rounded from opposite interval between ALE and PLE to posterior border; otherwise quite typical of males of the genus in the neotropical region. Eyes: lateral ocular tubercles well developed; those bearing AME and PME moderately so; viewed from above, posterior row rather strongly recurved, anterior row gently so, exclusive of the strongly convex lenses of ALE; viewed from in front, anterior row slightly procurved, measured by centers. Central ocular quadrangle wider behind than in front in ratio of about 3 : 2; wider behind than long in ratio of about 6 : 5. Posterior row occupies nearly .8 of width of carapace at that level. Ratio of eyes AME : ALE : PME : PLE = 4 : 9.5 : 6 : 9. AME separated from one another by about three times their diameter, from ALE by 3.5 times their diameter. PME separated from one another by slightly more than three times their diameter, from PLE by 4.3 times their diameter. Laterals separated by slightly more than twice the diameter of ALE. Clypeus: quite porrect; with the usual row of seven spines near ventral border; height equal to seven times the diameter of AME. Chelicerae, maxillae, lip and sternum all apparently typical of the genus. Legs: 123 = 4 in order of length; spines about as usual; tarsal claws typical; trichobothria observed on tibiae, metatarsi and tarsi. Palp: essential features shown in Figures 12-13; femur of moderate length; patella short, unmodified; tibia with two conspicuous apophyses; tarsus with a hook near center of bulb. Abdomen: first three fifths somewhat cylindrical

in form; not flattened; widened a little about $2/3$ from base; a short distance posterior to widened region there is a small, median, dorsal tubercle corresponding to the more conspicuous tubercle in the female; other features essentially typical of the genus. Color in alcohol: carapace yellowish in general; with many minute reddish dots and brownish spots and streaks impossible to describe in detail. Legs: yellowish with many small, reddish spots and streaks; first two pairs of femora with the characteristic mottled prolateral and retrolateral surfaces; third and fourth legs with more reddish spots than other legs. Sternum yellowish with small, pinkish dots irregularly distributed near margin. Abdomen: dorsum pinkish in general; a very narrow, reddish band extends across the widened region; irregular, reddish streaks occur in the posterior third of the dorsum and an irregular, narrow, reddish band separated in the middle occurs about half way between the base and the widened region; lateral sides yellowish with reddish dots and streaks; venter very light brown through the center flanked by whitish areas.

Female paratype. Total length, including porrect chelicerae and somewhat extended spinnerets, 5.91 mm; total length from anterior border of clypeus to posterior end of anal tubercle 5.4 mm. Carapace 1.8 mm long; 1.65 mm wide; about .7 mm tall; with about twelve long, slender spines around border of posterior declivity. Eyes: curvature of rows essentially as in male. Central ocular quadrangle wider behind than in front in ratio of about 3 : 2; wider behind than long in ratio of nearly 4 : 3. Ratio of eyes AME : ALE : PME : PLE = 5 : 12 : 7 : 10. AME separated from one another by a little more than three times their diameter; from ALE by slightly more than 3.5 times their diameter. PME separated from one another by about 3.5 times their diameter, from PLE by a little more than 4.6 times their diameter. Laterals separated by 2.3 times the diameter of PLE. Height of clypeus nearly equal to eight times the diameter of AME. Chelicerae, maxillae, lip and sternum all typical of females of the genus. Legs: $123 = 4$ in order of length; spines, tarsal claws, palpal claws and trichobothria all typical of females of the genus studied by the author. Abdomen: considerably more robust than in male; much widened two thirds from base and then sharply narrowed to posterior end; posterodorsal tubercle somewhat more prominent than in male (Fig. 14). Epigynum: obscurely distinctive; unlike any other seen in the genus from the Neotropical region; essential features shown in Figure 15; some variations noted among paratypes. Color in alcohol: essentially like that of male.

Type locality. Male holotype from university farm east of campus,

Mayaguez, Puerto Rico, W. I., January 15, 1964; female paratype from university farm north of campus, Mayaguez, January 17, 1964. Several paratypes of both sexes were taken with the described male and female types, at other localities in the same general region and on Route 106, 5 km. east of Mayaguez during January and February, 1964.

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